ORDER

6670.11

PROJECT IMPLEMENTATION PLAN
MULTICHANNEL VOICE RECORDER PROJECT
HIGH CAPACITY VOICE RECORDERS

June 3, 1992

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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RECORD OF CHANGES

DIRECTIVE NO. 6670.11

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL USE	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL USE

FOREWORD

This order sets forth the project implementation plan (PIP) for planning and implementing the High Capacity Voice Recorder (HCVR) part of the multichannel voice recorder project. This order provides management direction and technical guidance in the implementation of the project to all levels of the FAA from project inception through deployment.

Joann Kansier
Program Manager for Voice
Switching and Recording Program

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CHAPTER 1. GENERAL

1. PURPOSE. This order transmits the project implementation plan (PIP) which provides technical guidance and direction to all levels of the FAA that are responsible for the implementation of the High Capacity Voice Recorder (HCVR) part of the multichannel voice recorder project which replaces existing 152-channel recorders at Air Route Traffic Control Centers (ARTCC) and the New York Terminal Radar Approach Control (TRACON) facilities.

2. DISTRIBUTION. This order is distributed to division level to the NAS Transition and Implementation, Facility System Engineering, NAS Program Management, Systems Maintenance, Air Traffic Rules and Procedures, Air Traffic Plans and Requirements Services, and the Offices of the Program Director for Advanced Automation, Communication and Aircraft Acquisition, Air Traffic System Effectiveness, and Acquisition Support; branch level to the regional Airway Facilities divisions; the FAA Academy and FAA Logistics Center at the Mike Monroney Aeronautical Center; and the FAA Technical Center; standard distribution to Airway Facilities field offices.

3. DEFINITIONS. The HCVR equipment is the 60-channel recorder/reproducer system which is part of the multichannel voice recorder project. The following list contains the acronyms and abbreviations used in this order.

AF	Airway Facilities
a/g	air-to-ground
ARTCC	Air Route Traffic Control Center
ASU	Office of Acquisition Support
AT	Air Traffic
CAI	Contractor Acceptance Inspection
CIP	Capital Investment Plan
CO	Contracting Officer
COTS	Commercial off-the-shelf
COTR	Contracting Officer's Technical Representative
DRR	Deployment Readiness Review
E&R	Exchange and Repair
F&E	Facilities and Equipment
GFE	Government Furnished Equipment
g/g	ground-to-ground
HCVR	High Capacity Voice Recorder
IPS	Inches Per Second
IRIG-E	Inter-range Instrumentation Group-E
JAI	Joint Acceptance Inspection
LRU	Line Replaceable Unit
MCC	Maintenance Control Center
MTP	Master Test Plan
NAILSMT	National Airspace Integrated Logistics Support Management Team
NAS	National Airspace System
PAT&E	Production Acceptance Test and Evaluation

PD	Purchase Description
PR	Procurement Request
PIP	Project Implementation Plan
OT&E/I	Operational Test and Evaluation/Integration
OT&E/S	Operational Test and Evaluation/Shakedown
QRO	Quality and Reliability Officer
RMA	Reliability, Maintainability and Availability
RMMS	Remote Maintenance Monitoring System
TO	Technical Officer
TRACON	Terminal Radar Approach Control
VSCS	Voice Switching and Control System

4. AUTHORITY TO CHANGE THIS ORDER.

a. Authority. This order is issued under the authority of the Program Manager for Voice Switching and Recording, ANC-200. The authority to issue changes to this order is reserved for ANC-200.

b. Applicability. The information contained herein shall be used by FAA offices, services, regions, centers (Mike Monroney Aeronautical Center and FAA Technical Center), and AF sectors for their support of implementation activities for the HCVR part of the multichannel voice recorder project. The guidance and schedule information provided herein shall form the framework for those organizations in the more detailed planning activities required at the regional and field level.

c. Duration. The duration of this project shall continue through to the last HCVR system delivery to field facilities.

5.-19. RESERVED.

CHAPTER 2. PROJECT OVERVIEW

20. SYNOPSIS. HCVR's are utilized to record all air-to-ground (a/g) voice communications between air traffic controllers and pilots, and ground-to-ground (g/g) intra and interfacility communications between air traffic (AT) personnel. The existing 152-channel recorders used in ARTCC's and the New York TRACON have serious reliability, maintenance, and supply support problems. This project replaces those obsolete recorders with new 60-channel modular high capacity voice recorder systems under Capital Investment Plan (CIP) project 22-11: Multichannel Voice Recorders. The life cycle of HCVR systems is 7 years.

a. The recording of controller/pilot voice communications is required to assure adequate records in the event of incidents or accidents and to improve communication techniques of the personnel involved. Voice recording provides a means of event reconstruction in which a sequence of events and their time of occurrence can be analyzed.

b. Recording of voice communications is generally accomplished based on control positions as identified in the latest edition of Order 7210.3, Facility Operation and Administration.

c. Frequency recording is provided where additional unused recording channels are available. Frequency recording involves the utilization of a single recorder channel for each specific frequency in use at the facility.

d. Time source recording provided in Inter-Range Instrumentation Group-E (IRIG-E) format is recorded on a selected recorder channel to accurately log the time at which the recording took place.

e. Additional unused channels may also be used to record intra- and interfacility communications between controllers or specialists.

21. HISTORY. Recording voice communications with the 152-channel recorders is no longer practical. That equipment utilizes technology which is obsolete, does not meet FAA reliability, maintainability, and availability (RMA) requirements, and has severe supply and support problems.

a. In February 1989 the initial meeting of the National Airspace System (NAS) Integrated Logistics Support Management Team (NAILSMT) for the HCVR system was held.

b. In March 1990, the procurement request (PR) package was submitted to the contracts division for the purchase of commercial off-the-shelf (COTS) recorder hardware.

c. In February 1991 the PR package was revised to accommodate a new COTS acquisition strategy and resubmitted to the contracts division for implementation.

d. In April 1991 the request for proposals was released by the contracts division to all prospective bidders.

e. In July 1991 evaluation of proposals submitted by three bidders was completed by the technical evaluation team.

f. In August 1991 the Integrated Logistics Support Plan was revised in accordance with the new procurement strategy and released for comments.

g. In September 1991 the contract for the 60-channel COTS recording and playback equipment, contractor repair, and training services was awarded to Magnasync Corporation of Hollywood, California.

22.-29. RESERVED.

CHAPTER 3. PROJECT DESCRIPTION

30. FUNCTIONAL DESCRIPTION. The HCVR is a component of ARTCC communications as described in the CIP. The procurement of 60-channel recorders as COTS replacements for the existing 152-channel recorders will assist in the modernization of ARTCC's and the New York TRACON. HCVR equipment provides for the recording of 60 audio channels in a single cabinet. The equipment directly interfaces with communications systems within the site. The recorder unit routinely records all designated voice communications for a 24-hour period on a single reel of tape. A full description can be found in the Purchase Description (PD) titled, 60-Channel Voice Recording and Playback Equipment. The 60-channel recorder system provides the following functional features:

a. The recorder/reproducer unit is a dual transport machine with the RECORD, FAST FORWARD, REWIND, PLAY, STOP, SEARCH, and RECORD MONITOR functions activated by keypad entry on the tape transport front panel. A brief description of each feature is given below.

(1) The record feature is activated by keypad entry on the tape transport front panel.

(2) The fast forward feature permits the operator to advance the tape at accelerated speeds.

(3) The rewind feature permits the operator to rewind the tape to review the recording.

(4) The play feature permits the operator to monitor the audio signal through the internal speaker.

(5) The stop feature permits the operator to halt the movement of the tape.

(6) The search feature permits the operator to initiate the tape deck to determine the location of an event at high speed, when provided with the date and time of the event of interest. Both manual and automatic search features will be supported. The automatic search feature can advance/rewind the tape at high speed to the message with the selected date and time. It also has a manual override function.

(7) The record monitoring feature permits the operator to monitor the incoming audio signal through the internal speaker while the audio signal is being recorded.

(8) The fail-safe/scan feature is also activated by keypad entry located on the tape transport front panel. This feature electronically monitors the recording capability of each channel and provides a visual indication to the operator when failure occurs.

(9) The failure detection system electronically monitors the recording capability of each channel of the system as it records. On detection of failure in the primary deck, it provides an aural and visual indication to the operator of the failures and automatically transfers operation to the standby deck with provision for manual override. This automatic switching feature safeguards against loss of data during failure.

b. The portable reproducer unit has cassette RE-RECORD, FAST FORWARD, REWIND, PLAY, STOP and SEARCH functions and the capability for setting and displaying search times, dates and channels, similar to the recorder/reproducer unit.

(1) The cassette reproduction feature provides a convenient interface with a two-channel cassette recorder for high-speed reproduction of IRIG-E time code on one channel and any selected voice channel on the other.

(2) The setting and display indicators show a variety of switch settings (e.g., time/date, power on/off, channel and recorder status etc.).

(3) A built-in two-channel cassette recorder is provided to record the time code in IRIG-E format on one channel and any selected channel on the other with the record feature being switchable to operate in either a continuous or voice activated mode.

(4) The tape degausser unit is provided to automatically degauss the tapes without manual unwinding or rotating.

31. PHYSICAL DESCRIPTION. The 60-channel dual deck logging recorder/reproducer system consists of two major subsystems:

a. The recorder/reproducer unit consists of a cabinet, dual transports, one take-up reel per transport, primary and backup power supplies system, an audio system, a failure detection system, an automatic search system, and a time/date code generating and reading system.

(1) Each transport of the dual transport system functions as a standby for the other transport in the event of tape run-out, tape breakage, or any other recording interruption. Each transport is capable of at least 24 hours of continuous recording time on 1-inch tape using 3,600 feet of 1.0 mil base tape and operating at a nominal recording speed of 15/32 inches per second (IPS).

(2) The erase head component has the capability to completely erase tapes prior to recording.

(3) The cabinet housing the entire unit is approximately 83 inches high, 26 inches wide, and 23 inches deep.

(4) The time/date code generator unit records a time code signal on a selected audio track to accurately log the time at which the recording was made. The recorded signal will become the recording of the voice communications along with the timing of its occurrence.

(5) The remote indicator unit displays the status of each transport and provides a visual alarm in case of equipment malfunction. The unit is approximately 3.5 inches high, 8 inches wide and 6 inches deep.

(6) The tape transport is serviceable from the front for easy accessibility to all components. Each tape transport uses a standard 10-1/2 inch reel without auxiliary hub adaptors. The tape-head assemblies are plug-in replaceable.

(7) All electronic circuits are modular in construction and designed for quick replacement by using plug-in cards.

b. The portable reproducer unit consists of a cabinet, a tape playback deck, an automatic search system, and a two-channel cassette recorder system.

(1) The tape playback deck provides for high speed reproduction of any of the 60 channels recorded on 1-inch tape.

(2) The entire reproducer unit is transportable with carrying handles in a portable case. The outside dimensions are approximately 34 inches high, 24 inches wide and 20 inches deep. Equipment can be powered from any convenient a.c. source by use of the power cord supplied with the unit.

(3) The reproducer unit is also furnished with the automatic search capability and a foot control assembly to operate the search system.

(4) The tape head assemblies are easily replaceable from the front of the cabinet. Each tape transport uses a standard 10-1/2 inch reel.

(5) All electronic circuits are modular and designed for quick replacement by using plug-in cards. Other features of the portable reproducer are similar to those of the recorder/reproducer unit.

(6) A separate degausser unit is provided to automatically degauss tapes.

32. SYSTEM REQUIREMENTS. Both the recorder/reproducer and portable reproducer units have nominal power requirements of 115 Volts, 60 Hz, single phase a.c. current.

a. The recorder/reproducer unit is supplied power from dual power supplies. Terminals for the audio input lines are conveniently available and accessible from the rear (bottom) or the front of the cabinet. At ARTCC's and the New York TRACON the HCVR recorder/reproducer units are connected to the critical power bus.

b. The time/date code generator unit is equipped with battery backup to supply power during power outages for a period of at least 20 minutes. A built-in battery charger is capable of recharging the battery unit in less than 14 hours without monitoring or manual intervention.

33. INTERFACES. Recorder inputs are connected with voice signal outputs from communications switching system using standard electrical wiring techniques. Recording systems are also equipped with IRIG-E interfaces to coded time sources at facilities equipped with that feature.

34.-39 RESERVED.

CHAPTER 4. PROJECT SCHEDULE AND STATUS

40. PROJECT SCHEDULES AND GENERAL STATUS. The project activity schedule is provided in appendix 1. This schedule depicts the initial procurement of the 60-channel recording equipment. The projected completion dates are dynamic in nature and are, therefore, subject to change.

41. MILESTONE SCHEDULE SUMMARY. The HCVR program schedule is sectioned into four phases: acquisition, production, testing, and implementation. The following is a summary of the schedule milestones for the procurement of 60-channel recording equipment.

a. The acquisition phase began with the PR submitted to ASU in March 1990. The solicitation was issued in April 1991 and the contract awarded in September 1991. This phase will conclude with the last field site delivery in November 1993.

b. The production phase will begin in October 1991 and will continue until the last system is delivered to the last field facility.

c. The testing phase will include COTS Operational Test and Evaluation/Integration (OT&E/I) testing which will be concurrently performed with Production Acceptance Test and Evaluation (PAT&E) testing, and Operational Test and Evaluation/Shakedown (OT&E/S) testing.

d. The implementation phase will consist of the time period between the first delivery in December 1991 and end with the delivery to the last field facility.

42. INTERDEPENDENCIES AND SEQUENCE. HCVR systems are scheduled to be delivered after installation of raised floors and before deliveries of Voice Switching and Control System (VSCS) equipment.

43.-49. RESERVED.

CHAPTER 5. PROJECT MANAGEMENT

50. PROJECT MANAGEMENT, GENERAL. Program direction for the HCVR part of the multichannel voice recorder project is provided by FAA policies and procedures as defined by current FAA directives, and by active direction from management at the FAA program manager level. The multichannel voice recorder project is now being implemented in accordance with the applicable provisions of the latest edition of Order 1810.1, Major Acquisitions.

a. Program Manager for Voice Switching and Recording, ANC-200 has the overall responsibility for the acquisition and implementation of the HCVR part of the multichannel voice recorder project and provides program direction. This order directs the Facilities and Equipment (F&E) program manager assignments and program review procedures.

b. Associate Program Manager for Engineering, Voice Switching and Recording Program, ANC-120, develops, coordinates, and monitors the program from the production phase through the implementation phase.

c. The Contracts Division, ASU-300 is responsible for procuring, contract award and administration, and monitoring the administrative flow of material between the manufacturer and the FAA.

d. The Industrial Division, ASU-400 is responsible for assigning a Quality and Reliability Officer (QRO) to ensure that test and performance criteria agree with FAA standards and tolerances, and will assign an in-plant QRO to monitor the contractor's quality control program.

e. National Engineering Field Support Division, ASM-600, is responsible for updating maintenance of multichannel recorders, blue sheet tolerances, standards, tolerances, performance checks, and procedures of Order 6670.114, Maintenance of Multichannel Recorders. This office is also responsible for development of maintenance procedures, electronic engineering modifications, technical field support, and the development and performance of shakedown testing of the first operational system.

f. Communications/Navigation/Surveillance Division, ACN-200 is responsible to provide a Test Director, develop OT&E and NAS requirements, as well as reviewing PAT&E to ensure that it reflects the OT&E results and supports ASM-600 in OT&E/S testing.

g. Mike Monroney Aeronautical Center, AAC-1, will provide the centralized training and logistics support for the HCVR equipment. These functions will be accomplished principally by the FAA Logistics Center and FAA Academy in coordination with other center staff and support organizations and personnel. Specific functions are further defined as:

(1) The FAA Academy, AAC-900, will establish and maintain a training course for AF sector personnel involved with the maintenance of all equipment delivered under the contract of this program.

(2) The FAA Logistics Center, AAC-400, will provide administrative support for repairs and returned equipment.

(3) The Mike Monroney Aeronautical Center staff and support organizations will provide engineering, installation, and maintenance support for all equipment provided to the center for training, quality assurance, or second-level support. This support will be coordinated with the FAA Logistics Center, the FAA Academy, and tenant organizations.

h. Regional offices have responsibility for each designated site. This responsibility includes the site peculiar engineering and implementation activities of site preparation and checkout for operational turnover, as well as training and staffing. The regional coordinator will act as a focal point for coordination and scheduling during project implementation.

51. PROJECT CONTACTS. Listed below are the program manager and the associate program managers for the HCVR equipment.

Title	Office	Individual	Telephone FTS	Telephone Commercial
Matrix Team Associate Program Managers				
Program Manager	ANC-200	Joann Kansier	967-6960	(202) 646-6960
APME	ANC-120	Stephen Dash	967-4961	(202) 646-4961
APMC	ASU-330	Sue Handy	267-8828	(202) 267-8828
APMT	ACN-260	Wayne Bell	482-5271	(609) 484-5271
APMG	AGC-500	Richard McCarthy	267-7709	(202) 267-7709
APMQ	ASU-410	Bruce Petro	267-8905	(202) 267-8905
APML	ANS-420	George Clark	267-8161	(202) 267-8161
APMSE	ASE-200	Hoang Tran	957-2091	(202) 646-2091
APMR	ATR-113	Robert Paul	267-7045	(202) 267-7045

52. PROJECT COORDINATION. The HCVR part of the multichannel voice recorder project will be implemented in accordance with existing FAA procedures.

a. Implementation management requires the development of this PIP to assure the orderly introduction of the HCVR system into the NAS. Revisions, updates, and reissues of this order will be disseminated by the program office.

b. Fiscal status will be provided during program reviews. The latest edition of Order 2510.5, Fiscal Programming and Reporting Procedures for the Facilities and Equipment Appropriations, establishes quarterly review procedures for the reporting and review of the fiscal status of projects included in the program.

c. Logistics support procedures will be provided by the equipment contractors. The acquisition and material service will coordinate logistic support requirements in accordance with AF NAILS policy per the latest edition of Order 1800.58, National Airspace Integrated Logistics Policy.

d. Configuration management will use the policies and procedures established by the latest edition of Order 1800.8, National Airspace System Configuration Management, for the end-items specified in NAS-MD-001, NAS Air Traffic Control Subsystem Baseline Configuration. The Multichannel Voice Recorder equipment baseline will be established in the installations standards handbook. Changes to this baseline, up to the date of initial site operational availability, will not require FAA change proposal activity, only concurrence by the project manager. Subsequent to initial site operational availability, all change proposals will be coordinated in accordance with Order 1800.8.

53. PROJECT RESPONSIBILITIES MATRIX.

Para. #	Paragraph Title	ANC 200	ANC 120	ACN 260	ANS 420	AAF 11	ASM 640	ASU 420	AAC 400	AAC 940	QRO	REGION	SITE
51	Implementation Staffing	X	X				X	X				X	X
54	Managerial Communications	X	X		X		X		X				
55	Plans and Reports	X	X	X	X								X
60	Project Funding	X										X	
70	General Deployment Aspects					X							
71	Site Preparation											X	X
72	Delivery											X	X
73	Installation											X	X
81	Factory Verification										X		
84	NAS OT&E/Integration Testing			X									
85	NAS OT&E/Shakedown Testing						X					X	X
86	JAI											X	X
91	Training									X			
94	Vendor Data and Tech. Manual						X	X		X			

X Signifies first site only.

54. PROJECT MANAGEMENT COMMUNICATIONS. The Voice Switching and Recording Program Manager (ANC-200) is the focal point for all internal communications. In order to successfully proceed with project deployment and operational cutover, ANC-200 must be aware of all significant program activities. In addition to this direct interface with the project manager, the program office will ensure that the necessary information is made available to the organizations having action responsibility.

a. Contractor communications are authorized only for specific purposes, in accordance with FAA policy. The contracting officer (CO) has the direct contract responsibility, is responsible for all contractual matters and is the only person authorized to approve changes that will impact price, delivery, or schedule.

(1) The CO has been designated from ASU. The Resource Management Branch, ASU-330, is the office responsible for all contractual matters.

(2) The Program Manager for Voice Switching and Recording, ANC-200, has been designated as the program manager. A project manager has been designated from the ANC-120 staff who will also be the technical officer (TO). Therefore, ANC-120 is authorized to interface with the contractor's representatives concerning technical issues.

55. PLANNING AND REPORTS. The following plans and reports will be required during the acquisition, testing, and implementation phases of the HCVR project.

a. Contractor Documentation. The HCVR contractor will submit the following contractor data requirements items as well as others in accordance with the final negotiated contract.

(1) Training and training materials.

(2) Configuration management plan.

(3) Instruction books.

b. FAA Implementation Plans and Reports. The HCVR equipment implementation activities will be documented in the plans and reports described as follows.

FAA Documentation	Leads
Master Test Plan	ANC-120/ACN-260
OT&E/I Plan	ACN-260
OT&E/S Plan	ASM-600
Joint Acceptance Inspection Report	Regions/AF
Site Preparation	Regions/AF
Installation Plan	ANC-120
Integrated Logistics Support Plan	ANS-420

56. APPLICABLE DOCUMENTS.

FAA-D-2494/b	Technical Instruction Book Manuscripts: Electronic, Electrical, and Mechanical Equipment; Requirements for Preparation of Manuscript and Production of Books
FAA-E-2300	Panel and Vertical Chassis, Rack
FAA-G-2100	Electronic Equipment General Requirements
FAA-STD-013	Quality Control Program Requirements
FAA-STD-021	Configuration Management (Contractor Requirements)
FAA-STD-036	Preparation of Project Implementation Plans
Order 1810.4	FAA NAS Test and Evaluation Programs
Order 1800.58	National Airspace Integrated Logistics Policy
Order 1800.8	National Airspace System Configuration Management
Order 1810.1	Major Acquisitions
Order 2510.5	Fiscal Programming and Reporting Procedures for the Facilities and Equipment Appropriations
Order 4560.1	Initial Provisioning for Support of Facilities, Facility Components, Aircraft and Avionic Equipment
Order 4620.3	Initial Support for New or Modified Equipment Installation
Order 6000.15	General Maintenance Handbook for Airway Facilities
Order 6000.18	Field Repair of Equipment
Order 6030.45	Joint Acceptance Inspections for FAA Facilities
Order 6670.114	Maintenance of Multichannel Voice Recorders
Order 7210.3	Facility Operation and Administration
NAS-MD-001	NAS Air Traffic Control Subsystem Baseline Configuration
NAS-SS 1000	NAS System Specification, Volume I and IV
IRIG-106-86	IRIG Time Code Formats

57.-59. RESERVED.

CHAPTER 6. PROJECT FUNDING

60. PROJECT FUNDING STATUS, GENERAL. Implementation of the HCVR part multichannel voice recorder project corresponds with policies and guidelines established in the latest edition of Order 1810.1. The regions will implement the project in accordance with this order.

61. FUNDING. The funding of this project is to base all allocations on detailed cost estimates. All costs relating to engineering, testing, installation, and contract monitoring, as well as the cost associated with site preparation work and the initial logistic support, are provided from HCVR project funds.

62.-69. RESERVED.

CHAPTER 7. DEPLOYMENT

70. GENERAL DEPLOYMENT ASPECTS. Deployment of the HCVR recording equipment will be made directly to FAA field facilities. Regions will be responsible to submit shipping addresses and a contact name authorized to receive the equipment to the program office no later than 90 days prior to date of shipment.

71. SITE PREPARATION. Regions are responsible for preparing sites where existing 152-channel recording equipment is to be replaced by the 60-channel HCVR systems. Site preparation work will be included in the facility installation plan.

a. Government Furnished Equipment (GFE) listed in subparagraphs (1) through (4) will be provided, installed, or both, by regional organizations where applicable.

(1) Cables to connect the contractor provided remote status alarm panel with the HCVR. Cables/wiring to connect voice signals from the communications switching system to recorder inputs.

(2) Drawings of the site interface data necessary for the development of the installation plan.

(3) Any test equipment necessary for routine maintenance.

(4) Necessary space, power, lighting, heating, air conditioning and electrical grounding for HCVR installation.

b. Manpower resources needed for site preparation, equipment installation, checkout, and commissioning.

72. DELIVERY. Delivery to field facilities will proceed at an average of 10 systems per month commencing within 150 days after contract award. The delivery sequence is contained in appendix 2.

73. INSTALLATION PLAN. Installation instructions for equipment being replaced at an operating facility will be derived from contractor provided instruction books.

74.-79. RESERVED.

CHAPTER 8. VERIFICATION

80. FACTORY VERIFICATION. Factory verification conducted prior to shipment of the equipment will follow the contractor's final test procedures.

81. CHECKOUT. The contractor's test plan will be used for system checkout to verify the equipment operational capability.

82. CONTRACTOR INTEGRATION TESTING. Not Applicable.

83. CONTRACTOR ACCEPTANCE INSPECTION (CAI). Not Applicable.

84. FAA INTEGRATION TESTING. NAS integration testing will be conducted as described in the HCVR OT&E/I Test Plan.

85. SHAKEDOWN AND CHANGEOVER. The 60-channel HCVR recording equipment will be integrated by simultaneously operating it with the 152-channel recording equipment. The 152-channel equipment will be decommissioned once successful operation and full functionality of the new equipment is assured.

86. JOINT ACCEPTANCE INSPECTION (JAI). The JAI will be conducted in accordance with the latest edition of Order 6030.45, Joint Acceptance Inspections for FAA Facilities.

87.-89. RESERVED.

CHAPTER 9. INTEGRATED LOGISTICS SUPPORT

90. MAINTENANCE CONCEPT. Maintenance will be accomplished in accordance with the concept outlined in the latest edition of Order 6000.15, General Maintenance Handbook For Airway Facilities and the policy of field repair contained in the latest edition of Order 6000.18, Field Repair of Equipment. The physical location of the recorders within sites allows for frequent visual checks of the equipment, since the recorders are not monitored by the Remote Maintenance Monitoring System (RMMS). Regional maintenance responsibility is limited to management of the AF workforce to ensure that sufficient qualified personnel are assigned to maintenance sectors or work centers. Appendix 3 contains the HCVR maintenance concept. Regions will also be responsible to ensure proper calibration of test equipment. Maintenance will be performed at two levels: site and depot.

a. Site maintenance will be performed by FAA technicians and consists of troubleshooting the failure to the line replaceable unit (LRU) level and replacing it with a serviceable LRU. Preventive site maintenance is not required on any component of the HCVR system more frequently than once every 90 days. The defective components will be returned to the contractor for analysis, testing, repair and disposition as appropriate. Site repair of LRUs is not authorized.

b. Depot-Level maintenance will consist of emergency site repairs and diagnostic and bench testing of faulty LRU's and repair or disposal as appropriate by the contractor. The contractor maintenance personnel will be responsible to perform diagnostic fault isolation on defective components, repair of selected and repairable modules and cards and maintain inventory of spare parts.

91. TRAINING. The existing training proposal requires the training of 115 AF maintenance technicians at 23 sites to support the 170 recorder/reproducer systems.

a. AF maintenance personnel training requirements will be fulfilled with a residents course which will consist of lecture and hands-on training. AF maintenance technicians will be trained prior to equipment installation. The FAA Academy, Airway Facilities Branch, AAC-940, will develop this course and all required training materials, using contractor furnished recording equipment and test manuals. Maintenance personnel from the first six operational facilities will be trained by the contractor at his/her training facility.

b. Air Traffic (AT) personnel training requirements are not considered significant enough to warrant development of an independent training course. Operational tasks for the new recorders will be adequately described by site AF personnel. Formal training on recorder equipment will not be provided to AT personnel.

c. Special training requirements for FAA Academy instructors and FAA Technical Center personnel will be provided by the contractor.

d. Attrition training requirements for AF personnel is set at 10 percent of the initial training requirement annually.

92. SUPPORT TOOLS AND TEST EQUIPMENT. Test equipment and tools will be provided in accordance with the Integrated Logistic Support Plan to locate system malfunctions and perform routine maintenance.

93. SUPPLY SUPPORT. All supply support, spare equipment, and systems will be provided by the contractor.

94. VENDOR DATA AND TECHNICAL MANUALS. Two commercial instruction books in accordance with appendix I, of FAA-D-2494\b, will be provided with each delivered unit. Fifty additional commercial instruction books will be provided within 120 days after date of contract award for use by the FAA Academy.

95. EQUIPMENT REMOVAL. The excess 152-channel recording equipment will be removed and disposed of according to the latest edition of Order 4800.2 and applicable regional procedures concerning disposition of excess property.

96. FACILITIES. The implementation of the HCVR project will enhance existing facility operation.

97.-99. RESERVED.

APPENDIX 1. GENERAL HCVR VOICE RECORDER SCHEDULES

1. PURPOSE. This appendix contains scheduling information pertinent to the implementation of the HCVR part of the multichannel voice recorder project and may be updated without requiring modifications to this order.

2. MAJOR MILESTONES.

ACTIVITY DESCRIPTION	EFFECTIVE DATE
PR released for equipment	03/14/90
Integrated Logistics Support Plan draft	08/07/91
Solicitation issued	04/26/91
Contract awarded	09/27/91
First delivery order awarded	11/11/91
Maintenance training starts	11/18/91
Systems shipped to the FAA Technical Center	01/06/92
First system delivered to shakedown site	04/22/92
Systems shipped to the FAA Academy	06/15/92
Site spares delivered	06/30/92
Last system delivered to site	05/19/94

APPENDIX 2. DELIVERY SEQUENCE

TRAINING AND SUPPORT FACILITIES

NAME/LOCATION	ID	Recdr	Repr
FAA Tech. Cent./Atlantic City, NJ	ACN-260	1	1
Nat'l Field Eng./Oka. City, OK	ASM-640	1	1
FAA Logistics Center/Oka. City, OK	AAC-440	1	1
FAA Academy/Oklahoma City, OK	AAC-942D	6	6

OPERATIONAL FACILITIES

LOCATION/NAME	ID	REG	Recdr	Repr
Auburn, WA/Seattle	ZSE	NM	6	1
Hampton, GA/Atlanta	ZTL	SO	9	1
Aurora, IL/Chicago	ZAU	GL	7	1
Albuquerque, NM/Albuquerque	ZAB	SW	9	1
Oberlin, OH/Cleveland	ZOB	GL	8	1
Nashua, NH/Boston	ZBW	NE	7	1
Houston, TX/Houston	ZHU	SW	9	1
Longmont, CO/Denver	ZDV	NM	7	1
Leesburg, VA/Washington	ZDC	EA	8	1
Salt Lake City, UT/Salt Lake City	ZLC	NM	5	1
Islip, NY/New York	ZNY	EA	7	1
Olathe, KS/Kansas City	ZKC	CE	7	1
Farmington, MN/Minneapolis	ZMP	GL	9	1
Euless, TX/Fort Worth	ZFW	SW	8	1
Fremont, CA/Oakland	ZOA	WP	7	1
Memphis, TN/Memphis	ZME	SO	7	1
Palmdale, CA/Los Angeles	ZLA	WP	7	1
Miami, FL/Miami	ZMA	SO	7	1
Indianapolis, IN/Indianapolis	ZID	GL	9	1
Hilliard, FL/Jacksonville	ZJX	SO	7	1
Honolulu, HI/Honolulu	ZHN	WP	3	1
Westbury, NY/New York TRACON (QHM)	ZLI	EA	5	1
Anchorage, AK/Anchorage	ZAN	AL	6	1

APPENDIX 3. HCVR MAINTENANCE CONCEPT

PREFACE

The maintenance concept for High Capacity Voice Recorder (HCVR) systems is described in the November 1991 publication of the National Airspace Integrated Logistics Support Plan for HCVR.